CLAIMS

1. An encoding method for the compression of a video sequence including successive frames organized in groups of frames, each frame being decomposed by means of a three-dimensional (3D) wavelet transform leading to a given number of successive resolution levels, said encoding method being based on the hierarchical subband encoding process called "set partitioning in hierarchical trees" (SPIHT) and leading from the original set of picture elements (pixels) of each group of frames to wavelet transform coefficients encoded with a binary format and constituting a hierarchical pyramid, said coefficients being organized into a spatio-temporal orientation tree rooted in the lowest frequency (or approximation subband) resulting from the 3D wavelet transform and completed by an offspring in the higher frequency subbands, the coefficients of said tree being ordered into partitioning sets involving the pixels and corresponding to respective levels of significance, said sets being defined by means of magnitude tests leading to a classification of the significance information in three ordered lists called list of insignificant sets (LIS), list of insignificant pixels (LIP) and list of significant pixels (LSP), said tests being carried out in order to divide said original set of pixels into said partitioning sets according to a division process that continues until each significant coefficient is encoded within said binary representation, and said spatio-temporal orientation tree defining the spatio-temporal relationship inside said hierarchical pyramid, and said SPIHT algorithm comprising the following steps : initialization, sorting pass(es), refinement pass, and quantization step update, said method being further characterized in that, according to the algorithm indicated in the appendix B:

(a) in the initialization step:

- the three coefficients corresponding to the same location in the three color planes Y, U and V are put sequentially in the LIS in order to occupy neighboring positions and to remain together in said LIS for the following sorting passes if they all have insignificant offspring when analyzed one after the other at each significance level;

- the last bitplane for which insignificant offspring in luminance implies insignificant offspring in chrominance, n_i, is computed based on set significance level of the coefficients in the root subband and output in the bitstream ;

(b) in the sorting pass(es) going from n_{max} to n_i, when a luminance coefficient has insignificant offspring and if the three following conditions are satisfied by the two coefficients that follow said coefficient in the LIS:

- they are U and V coefficients respectively;
- they have the same spatio-temporal coordinates as said luminance coefficient;
- they also have insignificant offspring;

then this situation is coded by only a unique symbol, the output bistream being not modified with respect to the original SPIHT algorithm in all the other cases.

2. An encoding method according to claim 1, characterized in that, depending on the processed video sequence, said coding sub-step by means of a unique symbol is limited to the first significance levels and not applied to the lowest ones, the precise bit-plane level n_i considered as the limit being defined during the initialization step by means of the following relation:

$n_i = \min_{x,y,z} \{SSL_y(x,y,z) \text{ such as } SSL_y(x,y,z) \geq SSL_U(x,y,z) \text{ and } SSL_y(x,y,z) \geq SSL_V(x,y,z)\}$ (1)

SSL being the set significance level associated to each coefficient and n_{max} the maximum significance level.

3. A decoding method for the decompression of a video sequence which has been processed by means of an encoding method according to anyone of claims 1 and 2, said method being characterized in that it follows the same steps as said algorithm indicated in the appendix B, "output" operations being however replaced by "input" ones.